

Table and Figures illustrating EvaRIO main results

Table 1: Mix of Operator/Supplier/User roles

<i>Nature of the resource</i>	<i>Distribution and combination of Operator/Supplier/User roles</i>
Instruments	Operators, Suppliers, Users; very often Operator/Supplier; possible Operator/Supplier (co-development with Supplier) and Supplier/User (grant back of experience from User)
Data Data tools	Operator/Supplier (producer and/or curator of data); User/Suppliers (researchers producing data); Users; Suppliers (ex. journals or data base managers or storage systems)
Collections	Operators; Suppliers (equipment); Users/Suppliers (feeding the collection); Users (accessing the collection)
Competence/expertise	Suppliers/Operators (ex. supplying the IT architecture); Suppliers/Users (grant back)

Figure 1: Articulation between the different types of EvaRIO effects

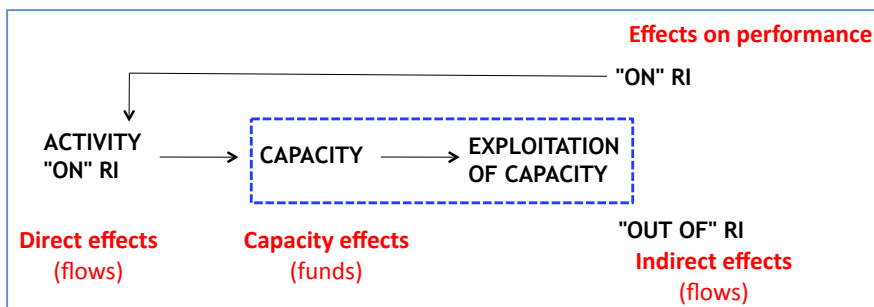


Figure 2: EvaRIO effects and other approaches

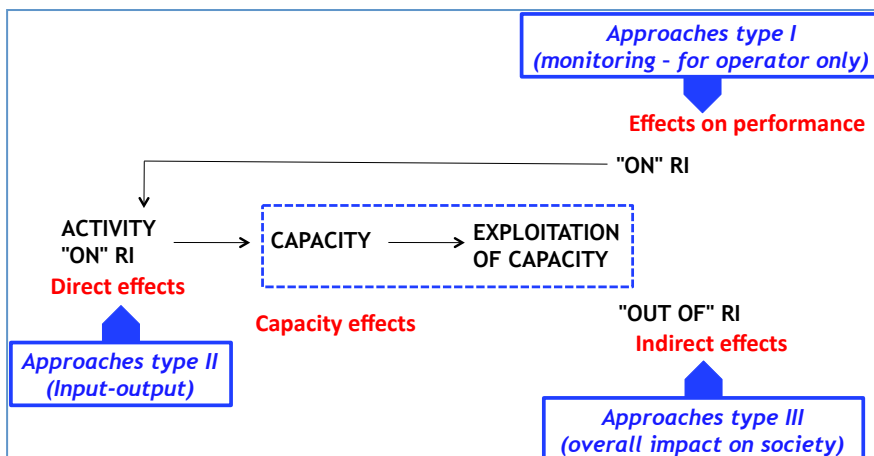


Table 2: Typology of EvaRIO effects and actors

	RI OPERATOR(S) <i>are given some money (whatever sources of funding) in order to build, maintain, enhance the resources and to perform its activity of operator.</i>	RI SUPPLIERS <i>are given some contracts in order to supply goods or service to the RI and contribute to the building, maintenance and enhancement of the resources.</i>	RI USERS <i>are using the RI for achieving some research activity which is part of a more or less large set of research activities, typically a research project or programme.</i>
<i>Direct effects</i>	volume of activities corresponding to the building and operating of RI	volume of activities corresponding to the supplying of resources open as RI	<ul style="list-style-type: none"> • volume of activities corresponding to the research projects using RI • <i>direct advantage from using the RI</i>
<i>Capacity effects (capacity: assets + capacity to mobilize and make them evolve)</i>	change in the capacity due to the operating of the RI, in the field of S&T, Network, Organisation & Methods, Reputation, Human Capital	change in the capacity due to the supplying of resources to the RI, in the field of S&T, Network, Organisation & Methods, Reputation, Human Capital	change in the capacity due to the use of the RI, in the field of S&T, Network, Organisation & Methods, Reputation, Human Capital
<i>Effects on performance of RI-related activities</i>	exploitation of the capacity for enhancing the performance as operator of the RI	exploitation of the capacity for enhancing the performance as supplier of the RI	exploitation of the capacity for enhancing the performance as user of the RI
<i>Indirect effects</i>	exploitation of the capacity for generating economic benefit for the actor "out of RI" : <ul style="list-style-type: none"> • same research field of actor but not on RI • in other field of research of actor • downstream market/society applications 	exploitation of the capacity for generating economic benefit for the actor "out of RI" : <ul style="list-style-type: none"> • same research field of the actor but not on RI • in other field of activity of the actor • downstream market/society applications 	exploitation of the capacity for generating economic benefit for the actor "out of RI" : <ul style="list-style-type: none"> • same research field of the actor but not on RI • in other field of research of the actor • downstream market/society applications

Table 3: Aggregation of effects

DIRECT EFFECTS				
	<i>OP</i>	<i>USER</i>	<i>SUP</i>	<i>ALL</i>
<i>Same single RI</i>	NR	y	y	n
<i>Network of RIs</i>	y	y	y	n
<i>All RIs</i>	y	y	y	n
CAPACITY EFFECTS				
	<i>OP</i>	<i>USER</i>	<i>SUP</i>	<i>ALL</i>
<i>Same single RI</i>	NR	p	p	n
<i>Network of RIs</i>	p	p	p	n
<i>All RIs</i>	n	n	n	n
EFFECTS ON PERFORMANCE				
	<i>OP</i>	<i>USER</i>	<i>SUP</i>	<i>ALL</i>
<i>Same single RI</i>	NR	p	n	n
<i>Network of RIs</i>	p	p	n	n
<i>All RIs</i>	n	n	n	n

Captions:

y: yes

p: partially

n: no

NR: not relevant

Same single RI: aggregation across actors related to the same single RI (e.g. SOLEIL, CERM ...)

Network of RIs: aggregation across actors related to different RIs grouped in a network (e.g. EMMA, Instruct...)

All RIs: aggregation across actors related to all RIs (possibly limited for instance to an ESFRI domain)

OP: aggregation among operator at the corresponding level

USER: aggregation among users at the corresponding level

SUP: aggregation among suppliers at the corresponding level

ALL: aggregation between different type of actors at the corresponding level

INDIRECT EFFECTS				
	<i>OP</i>	<i>USER</i>	<i>SUP</i>	<i>ALL</i>
<i>Same single RI</i>	NR	y	y	y
<i>Network of RIs</i>	?	y	y	y
<i>All RIs</i>	?	?	?	?

Table 4: Presentation of the 9 case studies

Criteria	linked to	BMS subfield	Type of RI resources	Organisat° status	Stage of evolution
4 in-depth case studies					
CERM Florence, IT	INSTRUCT + BIO-NMR	Structural biology	instrument (NMR)	standalone RI	long standing operation
SOLEIL Saclay, FR	BIOSTRUCTX	Structural biology	instrument (X-Ray crystallography)	standalone RI	recent operation
EMBL-EBI Hinxton, UK	ELIXIR	Bioinformatics	data	standalone RI	long standing operation
EMMA HMBU-IEG Munich, GER; IMG Prague, CZ; Karolin. Stockholm, S,..	INFRAFRONTIER	Translational research	collection (archive of mutant mice)	network	medium standing operation
Additional small cases studies					
EORTC Brussels, BELG	ECRIN	Clinical trials	human resources	network	long standing operation
IGBMC Illkirch, FR	INSTRUCT	Structural biology	instrument + data (multi-platforms: sample prod°, NMR, EM, image processing)	RI hosted in lab	long standing lab but recent RI operation
CNB-CSIC I2PC Madrid, SP	INSTRUCT	Structural biology	data (image processing)	RI hosted in lab	long standing lab but new RI operation
MPIB-DMSB Martinsried, GER	INSTRUCT	Structural biology	instrument (EM)	RI hosted in lab	long standing lab but new RI
OPPF Oxford, UK	INSTRUCT	Structural biology	instrument (sample prod°)	standalone RI	long standing operation

Table 5: Results of Focus Study 1 about open source RI

<i>Proposition</i>	<i>Results from the empirical study of the EMMA case</i>
<p><i>Proposition 1:</i> For a given RI there exist a set of access rules differentiated according to the context (nature of research, type of users, diversity of services provided, ...).</p>	<p><i>Partly validated in the case of EMMA.</i></p> <ul style="list-style-type: none"> - Access to the archive is open and free of charge for everybody - Conditions in order to obtain a mutant mouse may vary according to the type of users (firms may have to pay substantial fees)
<p><i>Proposition 2:</i> The use of RIs sometimes requires the acceptance of open source like clauses which would compel users to waive their exclusive right over the knowledge produced.</p> <p>More precisely:</p> <p><i>Proposition 2a:</i> The use of RIs generally contains grant-back clauses that forces users to retrocede knowledge that could improve the functioning of the RI to the RI (such as exception clauses - compulsory licenses - with respect to patented inventions for instance)</p> <p><i>Proposition 2b:</i> The use of RIs never contains grant-back clauses that force users to retrocede downstream applications developed by using the RIs (even if those applications can serve the RIs).</p>	<p><i>Not validated in the case of EMMA</i></p> <p>EMMA does not interfere in the writing of MTAs between researchers (EMMA is just a broker, i.e. it connect researchers)</p>
<p><i>Proposition 3:</i> The less rival the use of the RI, the more open its access, the more rival RI use the more controlled access</p>	<p><i>In line with the EMMA case.</i></p> <ul style="list-style-type: none"> - Information about the type of mice in the archive is clearly non-rival. - Access to this information is hence open without any condition to everybody. - The mouse in the archive is rival in use. Therefore access to mouse is not without charge. Users have to pay to get the mouse.
<p><i>Proposition 4:</i> In case RIs are rival in use, the mechanism of selection for access depends on the distance of the research projects to the market (from pure scientific relevance of the candidate projects with price not related to the number of candidates to pure price mechanism)</p>	<p><i>In line with what has been observed in the case of EMMA.</i></p> <ul style="list-style-type: none"> - Access is usually open for researchers - Firms may have to pay
<p><i>Proposition 5:</i> In some specific RI configurations which remain to be characterized, it is possible to identify a true community of users, i.e. a set of users interacting a lot with each other.</p>	<p><i>Hard to test with EMMA</i></p> <ul style="list-style-type: none"> - Existence of a community of users - EMMA seems to boost collaborations and networking
<p><i>Proposition 6:</i> More open RIs lead to a more collective mode of knowledge production</p>	<p><i>Hard to test with EMMA</i></p> <p>especially the link between the two aspects is difficult to check</p>

Table 6: Three levels of regional impact studies for RIs

<i>Type of impact</i>	Direct economic effects	Classical contribution to regional development (<i>coherent with market mechanisms</i>)	Evolutionary contribution to regional development (<i>economics of creativity</i>)
<i>Time horizon</i>	Short term	Medium or longer term	Long term
<i>Examples of items</i>	<ul style="list-style-type: none"> • Construction costs • Current expenses 	<ul style="list-style-type: none"> • Purchase of specialized equipment or services • S&T services and expertise for local firms • Human capital effects. 	<ul style="list-style-type: none"> • R&D collaborations • Entrepreneurship in high tech (startup firms) • Attraction of new sorts of activities (leading to new regional specializations)
<i>Main function of RI</i>	RI is nothing specific	RI as supplier of knowledge	RI as a source of creativity
<i>Comments</i>	Not really interesting for the sort of issues the EvaRIO study is dealing with: there is no specificity of RI as compared with other public investments	Effects interesting to measure by interviews and/or economic modelling (taking into account the specificities of the territory)	Important effects, very topical, but difficult to measure; such a study can be done only in retrospective

Table 7: Results of Focus Study 4 about regional impact of RIs

Knowledge diffusion/transfer	Tangible effects	<ul style="list-style-type: none"> • Services (expertise, etc.) • Collaborative research
	Intangible effects	<ul style="list-style-type: none"> • Increase of regional human capital (population) • Increase of absorptive capacities (firms, etc.)
Competitiveness	Micro level	<ul style="list-style-type: none"> • Researchers efficiency • Firms' efficiency
	Macro/meso level	<ul style="list-style-type: none"> • Systemic contribution to the efficiency of the regional innovation system (cluster policy included)
Attractiveness	Actor specific	<ul style="list-style-type: none"> • Firms (FDI) • National and international institutions • Talented people • Visitors and tourists...
	Global image	<ul style="list-style-type: none"> • All actors
Values	Science for itself	<ul style="list-style-type: none"> • Human achievement • Citizenship and democracy